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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/000,330 05/20/98 NAKAMURA

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WILLIAM F LAWRENCE
FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE
NEW YORK NY 10151

IM62/1012

EXAMINER

DOTE, J

ART UNIT

PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)
	09/000,330	NAKAMURA et al
Examiner	Group Art Unit	
J. DOTE	1753	

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Priod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

Responsive to communication(s) filed on 7/18/00

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

Claim(s) 6 - 15 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 6 - 15 is/are rejected.

Claim(s) _____ is/are objected to.

Claim(s) _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____ Interview Summary, PTO-413

Notice of Reference(s) Cited, PTO-892 Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948 Other _____

Office Action Summary

1. The examiner acknowledges the cancellation of claims 1-5 and the addition of claims 6-15 set forth in Paper No. 11 filed Jul. 18, 2000. Claims 6-15 are pending.

2. The objection set forth in paragraph 5 and the rejection under 35 U.S.C. 112, second paragraph, set forth in paragraph 7 of the Office action mailed Jan. 12, 2000, with respect to term "dienes" in the phrase "polyolefin resin having a cyclic structure having a structure crosslinked by . . . dienes" have been withdrawn in response to applicants' comments at page 6 of Paper No. 11 that the "dienes" are part of the polyolefin resin (i.e., a diene monomer is copolymerized with the polyolefin resin having a cyclic structure) as described at page 7, lines 7-13, of the specification. Applicants state that "crosslinking can be accomplished by incorporating a diene like norbornadiene into the cyclic olefin copolymer."

The rejection of claims 1-5 under 35 U.S.C. 112, second paragraph, set forth in paragraph 7 of Paper No. 10 with respect to the phrase "heat roller type copier or printer" has been mooted by the cancellation of claims 1-5, and the addition of claims 6-15, which do not recite said phrase.

The rejection of claim 5 under 35 U.S.C. 112, first paragraph, set forth in paragraph 10 of Paper No. 10 has been mooted by the cancellation of claim 5.

The rejections of claims 1-3 over Japanese Patent 63-191817 (JP'817) (see the PTO English translation for cites), and of claims 1 and 2 under 35 U.S.C. 102(e) over US 5,650,254 (Eguchi), set forth in paragraphs 13-15, respectively, of Paper No. 10, have been withdrawn in response to the cancellation of claims 1-3 and the addition of claims 6 and 7. Both JP'817 and Eguchi disclose a toner comprising a polyethylene grafted with a styrene monomer and an unsaturated carboxylic acid ester monomer. PTO translation, page 15, lines 1-5; example 1; and Eguchi, Examples 1-5. However, neither JP'817 nor Eguchi discloses a toner comprising a polyolefin resin comprising saturated cycloaliphatic groups, as recited in claim 6. Nor do the references disclose toners comprising a polyolefin resin being a copolymer derived from an alpha-olefin and an alicyclic compound having a double bond, as recited in instant claim 7.

3. The disclosure is objected to because of the following informalities:

(1) The specification, at page 3, lines 5-6, and at page 5, line 9, discloses a polyolefin resin of a cyclic structure having an intrinsic viscosity of 0.25 dl/g or more, and a polyolefin resin of a cyclic structure having an intrinsic viscosity of less than 0.25 dl/g, respectively. Intrinsic viscosity refers to the limiting value at infinite dilution of the specific viscosity of

a polymer, referred to its concentration. See page 621 of Grant & Hackh's Chemical Dictionary, fifth edition. Thus, the intrinsic viscosity of a polymer appears to be dependent on the solvent in which the polymer is dissolved and the temperature of the solution. The specification does not disclose the conditions under which the intrinsic viscosities are determined (e.g., solvent, temperature, etc.).

(2) The specification, at page 3, lines 6-7, and at page 5, lines 10-11, discloses a polyolefin resin of a cyclic structure having a heat distortion temperature (HDT) determined by DIN53461-B of 70°C or higher, and a polyolefin resin of a cyclic structure having a heat distortion temperature (HDT) determined by DIN53461-B lower than 70°C, respectively. However, the specification does not define the standard DIN53461-B, or the experimental conditions under which the HDT is determined. Furthermore, the specification does not disclose the date of the particular version of the standard that was used.

Appropriate correction is required.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

(1) Applicants argue that the intrinsic viscosity is determined by DIN53728 standard for measuring polyolefin viscosity, where decahydronaphthalene (or in decalin solvents) is

used as the solvent, and temperature is 135°C. Applicants refer to DIN53728, page 4, ISO 1191-1970, provided in Exhibit A.

However, the instant specification does not disclose how the intrinsic viscosity is determined, let alone by the standard DIN 53728. There is no evidence in the instant specification that the intrinsic viscosity is determined by the DIN standard. Furthermore, Exhibit A does not support applicants' comments with respect to the solvent and temperature used to determine the viscosity because the copy of the DIN standard is illegible and is in the German language.

(2) Applicants argue that Heat Distortion Temperature (HDT) is measured according to ISO 75-2 and a copy of the EN ISO 75-2 is enclosed as Exhibit 2.

However, the instant specification discloses that HDT is determined by DIN53461-B, not ISO 75-2. See specification, page 3, lines 6-7, and page 5, lines 10-11. Furthermore, Exhibit B has no probative value, because it is in the German language. Moreover, applicants did not address the objection. Applicants did not define the standard DIN53461-B. Nor did applicants state the experimental conditions under which the HDT is determined.

Accordingly, the objections stand. The experimental conditions under which the intrinsic viscosity and Hard Distortion Temperature (HDT) are essential subject matter since

they are necessary to describe and enable the instant claimed subject matter. Applicants are reminded that essential subject matter cannot be incorporated by reference to non-patent literature, but must be fully disclosed in the specification as filed. MPEP 608.01(p)A.

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In claim 15, the recitation "polyolefin resin comprising a cyclic structure having a structure crosslinked by metal ions" lacks antecedent basis in the specification. Compare page 7, lines 11-13, of the specification, which discloses that a polyolefin having a cyclic structure, which has a carboxyl group, is crosslinked by the addition of a metal. The specification does not disclose that the broadly recited polyolefin resin (i.e., a polyolefin resin comprising a cyclic structure without a carboxyl group) is crosslinked with a metal ion as recited in the instant claims.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

Applicants argue that the specification provides antecedent basis for the recitation, "polyolefin resin comprising a cyclic

structure having a structure crosslinked by metal ions," referring to page 7, lines 7-13, of the specification.

However, as set forth in the objection, the specification at page 7, lines 7-13, discloses that a polyolefin having a cyclic structure, which has a carboxyl group, is crosslinked by the addition of a metal. Instant claim 15 does not recite that the polyolefin resin that is crosslinked by metal ions, has a carboxy group. The specification does not disclose that the broadly recited polyolefin resin (i.e., a polyolefin resin comprising a cyclic structure without a carboxyl group) is crosslinked with a metal ion as recited in the instant claim.

Accordingly, the objection stands.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is indefinite in the phrase "binder resin comprising a polyolefin resin having a cyclic structure is a low-viscosity

resin . . . and a high-viscosity resin having a number average weight . . . " (emphasis added) because it is not clear what component is the low-viscosity resin, e.g., the binder resin or "a polyolefin resin." The phrase "is a low-viscosity resin" grammatically modifies the term "binder resin." However, since the claim recites that the binder resin also comprises a high-viscosity resin, it is not clear how the binder resin can be a low-viscosity resin.

The phrase "comprising a polyolefin resin having a cyclic structure" (emphasis added) is also indefinite because it is not clear whether "a polyolefin resin having a cyclic structure" refers to the polyolefin recited in claim 7, or is necessarily another polyolefin.

Claim 9 is indefinite in the phrases "binder resin comprising a polyolefin resin having a cyclic structure is a low-viscosity resin . . . and a high-viscosity resin having a number average weight . . . " (emphasis added); and "comprising a polyolefin resin having a cyclic structure" (emphasis added) for the reasons set forth with respect to claim 8.

Claims 8 and 9 are indefinite in the phrases "an intrinsic viscosity (i.v.) of less than 0.25 dl/g" and "an i.v. of 0.25 dl/g or more" because it is not clear what are the scopes of said phrases. Neither the instant claims nor the specification defines the conditions under which the recited intrinsic

viscosities are determined. See the discussion in item (1) of paragraph 3, supra.

Claims 8 and 9 are indefinite in the phrases "a heat distortion temperature (HDT) by DIN53461-B of lower than 70°C" and "a HDT of 70°C or higher" because it is not clear what are the scope of said phrases. The instant specification does not define the standard DIN53461-B. The instant specification does not disclose the conditions and criteria used in the standard used to determine the HDT, nor does it disclose the date or version of DIN53461-B. Standards can and do change over time: hence it is not clear what version of DIN53461-B was used, nor what version is intended in the claims.

Claim 10 is indefinite in the phrase "Mw/Mn ratio . . . is as small as from 1 to 2.5, namely, a nearly monodisperse state" for the following reasons:

(1) With respect to claim 7, it is not clear to what the Mw/Mn ratio refers, e.g., the binder resin or the polyolefin resin having a cyclic structure.

(2) With respect to claim 8, it is not clear to what the Mw/Mn ratio refers, e.g., the low-viscosity resin, the high-viscosity resin or the "polyolefin having a cyclic structure" recited in claim 8.

(3) It is not clear whether the ratio is in the range of from 1 to 2.5, or if the value is 1 or 2.5.

(4) It is not clear whether the phrase "namely, a nearly monodisperse state" (emphasis added) is merely exemplary and therefore redundant, or whether it is a required feature of the claim.

(5) Furthermore, the recitation does not further limit claims 7 and 8, to the extent that it recites that the lower limit of the Mw/Mn ratio is 1.

Claim 11 is indefinite in the phrase "comprises alpha olefin ethylene" because it is not clear whether the polyolefin resin comprising saturated cycloaliphatic groups recited in claim 6, and the polyolefin resin having a cyclic structure recited in claim 7 comprise the alpha olefin, or the alpha olefin ethylene is another component of the binder resins recited in claims 6 and 7.

Claim 12 is indefinite in the recited "intrinsic viscosity" and "heat distortion (HDT)" for the reasons set forth with respect to claims 8 and 9.

Claim 13 is indefinite in the phrase "binder resin consists of 1 to 100 parts by weight of a polyolefin resin having a cyclic structure, and 0 to 99 parts by weight of at least one resin" (emphasis added) because it is not clear whether the polyolefin resin recited in claim 13 is the "polyolefin resin having a cyclic structure" in claim 7 or the "polyolefin resin comprising

saturated cycloaliphatic groups" in claim 6. Or whether the resin is necessarily another polyolefin.

Claim 13 is also indefinite in the phrase "one resin selected from polyester resins, epoxy resins . . . styrene-acrylate resins, and other acrylate resins" (emphasis added) for improper Markush language. Proper Markush language is "R is selected from the group consisting of . . . and . . ." or "R is . . . or . . ." MPEP 2173.05(h). Applicants are using a combination of both phrases. Hence, it is not clear what is the scope of the instant claims.

Claim 14 is indefinite in the phrase "functional group selected from a carboxyl group, a hydroxyl group and an amino group" (emphasis added) for improper Markush language for the reasons set forth with respect to claim 13.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

Applicants argue that the cancellation of claims 1-5 and newly submitted claims 6-15 overcome the rejections.

However, for the reasons set forth above, newly submitted claims 8-14 did not overcome the rejections set forth with respect to now canceled claims 1-5 and introduced further rejections. In addition, for the reasons set forth in the above rejections and in paragraph 3, supra, the rejections with respect

to "intrinsic viscosity" and "heat distortion temperature (HDT)" stand.

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 8-10 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Instant claims 8-10 recite a low viscosity resin having a "heat distortion temperature (HDT) by DIN53461-B of less than 70°C" and an "intrinsic viscosity of less than 0.25 dl/g," and a high viscosity resin having a "HDT of 70°C or more" and an "i.v. of 0.25 dl/g or more." Claim 12 recites a polyolefin resin with a cyclic structure having a "heat distortion temperature (HDT) by DIN53461-B of 70°C or more" and an "intrinsic viscosity of 0.25 dl/g or more." However, the instant specification does not disclose adequately how these experimental parameters are

determined. The specification at page 3 merely discloses HDT by DIN53461-B and the recited intrinsic viscosity. The specification does not disclose what is DIN53461-B, nor what version or date of the standard was used. The specification does not disclose the experimental conditions under which the recited parameters were determined. As argued supra, the intrinsic viscosity of a polymer appears to be dependent on the solvent in which the polymer is dissolved in and the temperature of the solution. Furthermore, the organizations implementing the standard DIN53461-B presumably have the authority to modify standards, so any connection the instant claims may have to this standard, as recited, may vary over time. If the standard were to change, the disclosure would no longer support the claim limitations, and therefore the claim limitations would not be enabled. It would require undue experimentation for one of ordinary skill in the art to determine the experimental parameters needed to obtain the instant claimed numerical ranges.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive. Applicants argue that the cancellation of claims 1-5 and newly submitted claims 6-15 overcome the rejection.

However, for the reasons set forth in the above rejection and in paragraph 3, supra, the rejections stand.

9. Claims 6 and 8-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(1) Instant claim 6 and claims dependent thereon recite a polyolefin resin comprising saturated cycloaliphatic groups. The originally filed specification does not adequately describe such a broadly recited polyolefin resin. The broadest disclosure in the specification is at page 4, lines 31-32: a copolymer of an alpha olefin with an alicyclic compound having a double bond, such as cyclohexene or norbornene.

(2) Claims 8 and 9 recite that the binder resin comprises a high viscosity resin having a particular number average molecule weight, a weight average molecular weight, an intrinsic viscosity, and a heat distortion temperature. The originally filed specification does not adequately describe such a high-viscosity resin. The closest description in the specification is at page 5, lines 11-15, and page 6, lines 7-8, disclosing a high-viscosity polyolefin resin having a cyclic structure having the particular properties recited in instant claims 8 and 9. The specification does not broadly disclose a high-viscosity resin as recited in instant claims 8 and 9.

(3) If the binder resin in claims 8 and 9 is the low-viscosity resin, the originally filed specification does not provide an adequate description of said binder resin. The closest description in the specification is at page 5, lines 4-11 and 16-19, disclosing a low-viscosity polyolefin resin having a cyclic structure having the particular properties recited in instant claims 8 and 9. The specification does not broadly disclose that the toner binder resin is a low-viscosity resin as recited in instant claims 8 and 9.

(4) If the "alpha olefin ethylene" is not part of the polyolefin resin comprising saturated cycloaliphatic groups recited in claim 6 or of the polyolefin resin having a cyclic structure recited in claim 7, the originally filed specification does not provide an adequate description of said binder resin. The specification at page 4, lines 30-34, discloses a copolymer of an alpha olefin, such as ethylene, and an alicyclic compound having a double bond, such as cyclohexene or norbornene. The specification does not disclose that the toner binder resin comprises an alpha olefin ethylene in addition to a polyolefin resin having a cyclic structure as recited in claim 11.

10. The recitation in claim 12 that the recited polyolefin resin having a cyclic structure that has the recited intrinsic viscosity, molecular weight and HDT "is contained in a proportion

of less than 50 % by weight based on the entire binder resin" reads on "zero weight percent." In other words, the recited polyolefin need not be present in the toner. This reading is consistent with the "inventive" examples of the specification. The examples 1, 3, 4, 6-8, 10-18 and 20-27, which are labeled inventive, comprise toners that contain only one polyolefin having a cyclic structure. However, these polyolefins do not have the intrinsic viscosity, molecular weight and heat distortion temperature recited in instant claim 12. Applicants have agreed with this interpretation. See page 10, lines 14-17, of Paper No. 11, where applicants state that "the proportion of less than 50% by weight" can "indeed be 0%." Rejections made in view of this reading of claim 12 follow infra.

11. Claims 6, 12/6, and 13/6 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 58-149060 (JP'060) (see PTO translation for cites).

JP'060 discloses a toner that comprises a colorant, carbon black, a charge controlling agent, and a binder resin that comprises a polyolefin resin having a cyclic structure, polynorbornene, and a styrene-acrylate resin. JP'060 discloses that the toner is effectively fixed by a heating roller without causing offsetting even when a fixed roller is not fed a

releasing solution. Translation, Working Example 2 at pages 11-12.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

Applicants argue that JP'060 does not meet every limitation of instant claim 6 because JP'060's polynorbornene resin does not meet the definition of a cyclic olefin copolymer as recited in claim 6.

However, claim 6 does not recite a cyclic olefin copolymer as argued by applicants. Rather claim 6 merely recites the presence of "a polyolefin resin comprising saturated cycloaliphatic groups." Such a polyolefin resin recited in claim 6 encompasses both homopolymers and copolymers comprising saturated cycloaliphatic groups. Norbornene is a cycloaliphatic compound having one -CH=CH- group, (i.e., a double bond). Thus, JP'060's polynorbornene resin is a polyolefin resin comprising saturated cycloaliphatic groups. Accordingly, JP'060's toner fully meets every limitation recited in claims 6, 12, and 13.

12. Claims 6, 12/6, 13/6, and 14/6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,324,616 (Sacripante) combined with the Handbook of Imaging Materials, page 169.

Sacripante discloses a heat fusible encapsulated toner that comprises a core comprising colorant and a binder resin. The

binder resin comprises a polyolefin having a cyclic structure, such as polynorbornene. Sacripante, col. 7, line 56, to col. 8, line 15; examples I to VIII. Sacripante further discloses that the polyolefin having a cyclic structure can be obtained by polymerizing "hydroxy nornbornene" [sic], which meets the limitations of claim 14. Sacripante, col. 7, line 63-64, reference claim 7.

Sacripante does not disclose that the toner comprises a charge controlling agent. However, the use of a charge controlling agent is well-known in the art. The Handbook of Imaging Materials, at page 169, discloses that it is known to add charge control additives to toners when the pigment blended into the polymer resin does not give an adequate charge level or rate of charging. The Handbook further discloses a number of known charge control agents, such as nigrosine, and metal complexes, that are effective at giving the toner a positive or negative charge.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of the Handbook of Imaging Materials, to add a charge control agent to the toner disclosed by Sacripante, because that person would have had a reasonable expectation of successfully obtaining a positively or negatively charged toner that has an adequate charge level and rate of charging.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

Applicants argue that the Sacripante's polynorbornene resin does not meet the definition of a cyclic olefin copolymer as recited in claim 6. Applicants also argue that the examiner has used impermissible hindsight for combining the references.

Applicants argue that the examiner has not provided any citations to the references for the requisite reference teachings of motivation to modify Sacripante.

First, as explained in paragraph 11, supra, claim 6 does not recite a cyclic olefin copolymer as argued by applicants.

Sacripante's polynorbornene resin is a polyolefin resin comprising saturated cycloaliphatic groups, which meets the limitation of a "polyolefin resin comprising saturated cycloaliphatic groups" recited in instant claim 6.

Second, in response to applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicants' disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The Handbook of Imaging Materials at page 169 teaches the use of a charge control agent in toners. Therefore, the use of charge control agents in the toners taught by Sacripante is well-motivated.

13. Claims 6, 7, 10/7, 12/6,7, 13/6,7, 14/6,7, and 15/6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 2-184864 (JP'864) (see PTO translation for cites) combined with page 13 of Grant & Hackh's Chemical Dictionary, fifth ed.

JP'864 discloses a toner that comprises a colorant and a binder resin comprising a cyclopentadiene-type polymer, which is a polyolefin resin having a cyclic structure. Translation, page 2, lines 8-14; Working Examples 8-24 at pages 20-22; and JP'864, page 631. The cyclopentadiene-type polymer can be a homopolymer obtained from dicarboxy diallyltricyclo(5,2,1,0²⁶)-decane, or a copolymer obtained from dicarboxy diallyltricyclo(5,2,1,0²⁶)-decane, lauryl methacrylate, methacrylic acid, and divinylbenzene. Translation, Polymerization Examples 1 and 2 at pages 7-8. The homopolymer obtained from dicarboxy diallyltricyclo(5,2,1,0²⁶)-decane

comprises saturated tricyclo(5,2,1,0²⁶)-decane groups and carboxy groups, thereby meeting the limitations of claims 6 and 14/6. Dicarboxy diallyltricyclo(5,2,1,0²⁶)-decane comprises saturated tricyclo(5,2,1,0²⁶)-decane, which is an alicyclic compound having a double bond. Divinyl benzene is a diene monomer. Methacrylic acid is an alpha olefin acid. See page 13 of Grant & Hackh's Chemical Dictionary, fifth ed. Thus, the copolymer comprises saturated tricyclo(5,2,1,0²⁶)-decane groups and carboxy groups, meeting the limitations of claims 6, 7, and 14/6,7. The copolymer is also crosslinked by divinyl benzene, a diene, meeting the limitation of claim 15/6,7.

JP'864 discloses that since the cyclopentadiene-type polymer has a large number of allyl groups, the allyl groups can readily undergo a polymer radical reaction. Thus, the toner can be fixed by ultraviolet-cure. In other words, the cyclopentadiene polymer can be crosslinked. JP'864 discloses that the toner provides toner images with increased density, and has good resolving power and fixing. Translation, page 4, lines 17-25; page 5, lines 16-25.

JP'864 does not exemplify a toner that comprises a charge controlling agent. However, JP'864 discloses that a polarity-controlling agent, i.e., a charge control agent, can be incorporated in its toner. Translation, page 6, lines 21-22.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of JP'864, to add a charge control agent to the toner disclosed by JP'864, because that person would have had a reasonable expectation of successfully obtaining a positively or negatively charged toner that provides toner images with increased density, and has good resolving power and fixing, as taught by JP'864.

Applicants' arguments filed in Paper No. 11 have been fully considered but they are not persuasive.

Applicants argue that JP'864 does not render the instant claimed toner obvious because JP'864's cyclopentadiene-type polymer resin does not meet the definition of a cyclic olefin copolymer as recited in claims 6 and 7. Applicants also argue that the examiner has used impermissible hindsight. Applicants argue that the examiner has not provided any citations to the references for the requisite reference teachings of motivation to modify JP'864.

These arguments are not persuasive. As discussed in the above rejection, JP'864's cyclopentadiene-type homopolymer and copolymer meet the limitations of instant claims 6 and 7.

Furthermore, applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning is not persuasive for the reasons set forth in paragraph 12 in the paragraph bridging pages 19 and 20, supra.

As set forth in the rejection, the teaching that polarity-controlling agents can be added to its toners, Translation, page 6, lines 21-22, provides ample motivation, reason, and suggestion to use charge control agents in JP'864's toners.

14. Claims 6, 7, 10/7, 11/6,7, 12/6,7, and 13/6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,817,843 (Masuda) combined with US 5,741,617 (Inaba) and US 5,179,171 (Minami).

Masuda discloses a toner that comprises a colorant, a quinizarin dye, and a binder resin. Col. 24, lines 57-62, and examples 63-88 at col. 50. Masuda discloses that said toner provides clear color lightfastness images free from fogging. Col. 50, lines 32-44.

Masuda discloses that toner can further comprise an "antistatic agent" such as metals of salicylic acid, organic salts of boron, quaternary ammonium compounds, metal complexes of imidazole, and pyridinium salts. Col. 25, lines 33-39. Masuda discloses that said antistatic agents control the electrification of the toner without affecting the color tone of the toner. Col. 25, lines 29-32. Masuda does not identify the antistatic agents as charge control agents as recited in the instant claims. However, the Masuda's antistatic agents have the same function as charge control agents, namely, to control the charge level, i.e.,

the electrification, of the toner. Inaba identifies metals of salicylic acid, boron compounds, quaternary ammonium compounds, and imidazole compounds as charge control agents. Col. 13, lines 51-60. Accordingly, the antistatic agents disclosed by Masuda are charge control agents. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Masuda does not disclose that the binder resin is a polyolefin resin having a cyclic structure as recited in the instant claims. However, Masuda discloses that the binder resin can be any binder resin known in the art. Col. 24, lines 61-62. Masuda further discloses that the binder resin can be alicyclic hydrocarbon resins. Col. 25, lines 23-24.

Minami discloses a random copolymer resin having a cyclic structure that meets the limitations of the instant claims. Minami discloses that the low molecular weight random copolymers can be used as electrophotographic toners. Col. 15, lines 58-59, and col. 16, line 2. The random copolymer is obtained from ethylene and at least one cycloolefin, such as bicyclo[2,2,1]hept-2-ene, which is incorporated in the polymer chain without ring opening. Col. 4, line 30, to col. 8, line 5. The random copolymer comprises saturated alicyclic groups meeting the limitations of claim 6. Ethylene and the cycloolefin meet the limitations of claims 7 and 11.

Minami teaches that his random copolymers have excellent transparency, thermal resistance, dielectric properties, and mechanical properties. Col. 4, lines 16-21.

It would have been obvious for a person having ordinary skill in the art to use a random copolymer obtained from ethylene and a cycloolefin as taught by Minami as the binder resin in the toner disclosed by Masuda, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic color toner having the properties disclosed by Masuda and excellent transparency.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599 for after final faxes, and (703) 305-7718 for other official faxes.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JLD
October 6, 2000

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500
F00